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EXAMINER

GUADALUPE, YARITZA

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2859

DATE MAILED: 03/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/986,712

Applicant(s)

SCHLAGHECK ET AL.

Examiner

Yaritza Guadalupe

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 08 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-9 and 11-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-9 and 11-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

In response to Amendment filed December 8, 2003

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 and 3 – 9 and 11 - 16 are rejected under 35 U.S.C. 102 (b) as being anticipated by Lesniak (US 5,582,485).

Lesniak discloses a system for thermal imaging inspection (20) inherently comprising a mounting for mounting said object (30) under inspection, a pulsed laser source (34) having a beam able to be positioned for providing a heat pulse at a predetermined location on said object since a shield (32) is provided on the object to allow heat flow to a localized point (See Column 5, lines 5 – 9), a thermal infrared camera (24) for capturing thermal images on the top surface of said object, memory unit / computer and processor (26) for capturing a sequence of image signals from the infrared camera (24), for storing data representative of heat diffusion resulting from said heat pulse and for comparing said heat diffusion data to a reference data set provided in the computer (See Column 8, lines 57 – 67).

Lesniak discloses a system and method for inspecting comprising the steps of injecting a heat pulse by light beam at a selected point on a surface of an object (30), capturing a sequence of consecutive thermal images of said object to record heat diffusion over time (See Column 7, lines 45 – 63), comparing said heat diffusion to a reference (See Column 8, lines 64 – 67) and determining whether said object comprises any defects (See Column 7, lines 59 – 63) as stated in claims 1 and 3 - 16 can be met by the regular operation of the apparatus disclosed by Lesniak.

With respect to the preamble of the claims : the examiner points out that a preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the structural limitations are able to stand alone. See *In re Hirao* , 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie* , 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 17, 21, 22 and 24 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Lesniak (US 5,582,485) in view of Vachtsevanos et al. (US 6,269,179).

Lesniak discloses an apparatus as stated in paragraph 2 above.

Lesniak does not disclose the frame grabber as stated in claim 17. Lesniak does not disclose the mounting means comprising register pins as stated in claim 21, or a stage as stated in claims 22 and 24.

Regarding claim 17 : Vachtsevanos et al. discloses a system for thermal imaging of PCB comprising a pulsed laser source (27), a thermal infrared camera (16) for capturing thermal images on the top surface of said object, and a frame grabber (See Column 5, lines 25 – 26) for capturing enhanced level images. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to add a frame grabber as taught by Vachtsevanos et al. to the system disclosed by Lesniak in order to increase the accuracy of the process by enhancing the quality of the images.

Regarding claims 21, 22 and 24 : Lesniak discloses a system for thermal imaging comprising an object under study which inherently suggests the use of some type of mounting means so as to retain the object in position, but does not mention the particular mounting means used. Vachtsevanos et al. discloses an apparatus having a mounting stage movable in X and Y direction, and a controller disposed in a computer (22) programming an entire sequence of

points (See Column 6, lines 7 – 8) on said object and causing said mounting to align sequentially each point of said sequence of points to said laser, a focusing optical mechanism including a lens and fiber optic array, an illumination technique and filters for controlling the pulsed laser source directed to the object which inherently teaches the use of an optical power attenuator. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to replace the mounting means disclosed by Lesniak with a mounting means as taught by Vachtsevanos et al. in order to increase the accuracy of the process by providing a secure automated mounting surface that allows for continuous measurements and inspection.

5. Claims 18 – 20 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Lesniak (US 5,582,485) in view of Vachtsevanos et al. (US 6,269,179), as applied above, and further in view of Moran (US 5,127,726).

Lesniak and Vachtsevanos et al. discloses an apparatus as stated in paragraph 2 above.

Lesniak and Vachtsevanos et al. does not disclose the X – Y galvanometer as stated in claims 18 – 20.

With respect to claims 18 – 20 : Moran discloses an apparatus for surface inspection comprising a rotating galvanometer (52, 52a) for aligning a pulsed laser source (51) to a precise location on the object (W) under inspection through an input/output interface (52a)

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which will control said galvanometer. Therefore, it would have been obvious to a person having ordinary skill in the art the time the invention was made to add a rotatable galvanometer as taught by Moran to the system and method disclosed by Lesniak and Vachtsevanos et al. in order to enhance the accuracy of the process and reduce the focusing and aiming time of the laser to the object while in motion during inspection.

6. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lesniak (US 5,582,485) in view of Vachtsevanos et al. (US 6,269,179) as applied to claims 17, 21, 22 and 24 above, and further in view of Nakata et al. (US 5,250,809).

Lesniak and Vachtsevanos et al. disclose an apparatus as stated in paragraph 5 above.

Lesniak and Vachtsevanos et al. do not disclose the mounting also movable in the Z direction as stated in claim 23.

Regarding claim 23 : Nakata et al. discloses a device for checking comprising a mounting table (43) for support of the object (44) under inspection, said mounting comprising a stage movable in X in Y and in Z direction. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to replace the mounting stage disclosed by Lesniak and Vachtsevanos et al. with a stage movable in the X, Y and Z direction as

taught by Nakata et al. in order to increase the range of inspection as well as decreasing the alignment time during inspection.

Response to Arguments

7. Applicant's arguments, see pages 10 - 12, filed December 8, 2003, with respect to the rejection(s) of claim(s) 1-24 under U.S.C. 102 and U.S.C. 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of the newly found prior art reference.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references are considered to be relevant to the present application :

- a. Mandelis et al. (US 5,667,300)
- b. Laukkala et al. (US 4,551,030)
- c. Legrandjacques et al. (US 6,419,387)
- d. Lesniak (US 5,376,793)
- e. Legrandjacques et al. (US 6,343,874)
- f. Chivian et al. (US 3,873,181)
- g. Murphy et al. (US Pub. No. 2002/0018510)

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9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yaritza Guadalupe whose telephone number is (571)272 -2244. The examiner can normally be reached on 9:00 AM - 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F.F. Gutierrez can be reached on (571) 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Yaritza Guadalupe
Patent Examiner
Art Unit 2859
March 1, 2004

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